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# THE IRON RESOURCES OF BRITISH COLUMBIA

## Report of a Special Committee Which Was Submitted at the Last Meeting of the Voters' League — Some Suggestions.

Below is published the full report which P. R. Smith, for the committee on iron and steel manufacture, read at the meeting of the Voters' League on Tuesday evening, June 24

We, your committee appointed to investigate the resources of this province in iron ores with a view of determining the economic value of the same, together with a comparison in cost of manufacture, and prospective markets should smelting and rolling mills be established, beg to make the following report:

### Ore Deposits.

Your committee find that very large deposits of magnetite ores are to be found within the districts of Victoria, Alberni coast, Nanaimo, Bella Coola, Cariboo, Similkameen, Kamloops and Queen Charlotte Islands. Hematite also exists, the extent of which remains as yet a matter of conjecture. Prospectors are now looking up these properties and fuller information will be available to your committee within a short time.

### Locations.

Of the developed properties, upon which a value from an economic standpoint may be based, those of the Texada Island may be cited. It is here the Puget Sound Iron Co. own 2,700 acres situated on the southwest side of the Island. Sufficient development has taken place to expose an ore body estimated by experts as representing 8,000,000 tons of commercially valuable iron which gives a detailed test of from 68 to 70 per cent. iron, and comparatively free from objectionable properties. Arrangements

have been made to transport this ore by a gravity tramway 1,100 feet in length and 500 feet above sea level, with the intention of making regular shipments to the smelter at Irondale, Washington. Here the ore is subjected to a mixture of from 1-9 to 3-10 of bog ore obtained near Hamilton, Skagit County. From this an excellent foundry pig is made, and was utilized in building the United States war vessels Olympia, Monterey, Charleston and Oregon, by the Union Iron Works Co., of San Francisco. Experts have pronounced this a superior article to the Eastern manufacture, and it is certainly a compliment to the British Columbia magnetite ores. Of other properties upon which development work has taken place, mention may be made of the Serata, with an ore body of 80 feet wide, a depth of 90 feet, with an easterly extension of considerable distance; over 800 feet has been crosscutted with excellent results. The Copper Island and Sheshart have each an ore width of over 100 feet, a tunnel has been made at the latter of 200 feet wide with a depth of 800, a very extensive body of limestone lying contiguous to this property. On the Copper Island a tunnel of 100 feet wide and of the same depth has exposed a vein from 15 to 20 feet, assaying 60 per cent. iron and no impurities. This has been traced for over half a mile, and described as one of unlimited supply. Hematite deposits lie in close proximity. These mines are situated in the Barkley district and are bonded by an American syndicate who expect within a short time to expend three million dollars in the erection of smelter and rolling mills. The Redonda mine is situated on the north shore of West Redonda Island, the north

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shore of which rises abruptly from the sea to a height of over 3,000 feet. The ore outcrop is situated at an altitude of 450 feet, a foothold to this rapid rise being afforded only by the standing timber. In 1893, 623 tons of magnetite ore were shipped to the Oswego Iron & Steel Co.'s furnaces in Oregon. This work exposed an open face of solid magnetite 30 feet wide by 30 feet in height, assaying 66 per cent. per ton. No further work has been recorded, and owing to the peculiar situation little is known of the extent of this deposit.

The Glen iron mine at Cherry Bluff, near Kamloops, on the line of the C. P. R., is another which has produced in a small way. The product of this mine is of excellent quality, 66-83 per cent. metallic iron, and the annual output of from 500 to 2,000 tons being conveyed by aerial tramway to the C. P. R. tracks. This ore has been extensively used for flushing purposes by the smelters of Tacoma, Revelstoke and Nelson. The estimated ore in sight being given at 2,000,000 tons.

The Kootenay river deposits reported by Dr. Dawson are quite extensive, and are of a magnetite character, their situation renders them of little commercial value, lacking facilities for cheap transportation.

Another extensive deposit of a hermatite formation was discovered by Mr. Ludloff, a German geologist, in the Cariboo district. This measures 500 feet in thickness, and, like the former mine, is of little value with the present means of communication.

At Port Renfrew a vein of 100 feet in width has been located, and this is situated some seven miles from tide water and assays 68.8 per cent. iron.

A tunnel at Rivers Inlet 100 feet wide with a corresponding depth has exposed a vein of 30 feet width, assaying some 69 per cent. iron. Little is known by record of the two latter deposits beyond that here stated.

In addition to the forementioned properties, deposits of a more or less extensive nature have been discovered at Sooke, Chemainus, Toba and Knight's Inlets, Comox, Nootka Sound, Bella Coola, Alberni, Graham and Moresby Islands, Similkameen, and other points, showing conclusively that iron ore deposits are not confined to any particular locality. It is an undoubted fact that immense bodies of both magnetite and hermatite lay awaiting development the moment demand and favorable conditions exist for iron and steel production.

#### Quality.

The investigations of your committee show that while quantity is a prime factor in the distribution of iron deposits throughout the province, the quality and commercial value of the same is of the highest order.

Numerous assays have been made and tests applied in England, Scotland, Pittsburg, and indeed many of the leading iron laboratories of the world, in which the iron ores of this province have not only held their own, but have been proved superior to many now used in course of iron production. Space alone prevents your committee from giving a resume of analysis in this report, but they can be tabulated if it is the wish of this meeting, and filed for future reference.

#### Shipping Conditions.

A peculiar feature of the iron distribution on the East and West Coasts lay in their accessibility to deep water shipment. Many of the deposits are situated at the very edge of ocean navigation, with sufficient grade for chuting the ore into bins at Salt water. It is stated in some locations ore can be quarried at 20 cents per ton and delivered on board of steel scows for 30 cents or less. In this respect an advantage is possessed by the Coast properties over the inland deposits, another important factor is the abundance of timber for making charcoal. The immediate deposits of limestone and coal, together with magnificent water power stretches for generating light and motive powers all point that nature has destined this province as the workshop of the world.

#### Cost of Manufacture Here and Elsewhere.

This is a phase of the inquiry in which your committee have experienced difficulty. The short time allotted for report has not afforded us an opportunity of collecting data upon the subject, and in view of the comprehensive reports now being received by the provincial government from British consular agents residing within spheres of the iron industry, together with the increased rate of wages paid on the Coast to labor, we deem it advisable to leave this question subject to future investigation and report. We are satisfied, however, with the favorable conditions mentioned elsewhere, and that the abundance of raw materials other than iron will more than offset any difference arising from a wage comparison.

As showing the difference in point of supply and manufacture between the Irondale smelter in Washington and the Collingwood of Ontario, your committee submit the following as a probable estimate. It must be remembered that it requires two tons of iron ore to produce one ton of pig. At the Irondale smelter the Texada ores are laid down as undermentioned:

Mining and delivery of two tons ore	
at \$1 per ton .....	\$ 2 00
Freight on same at \$1 per ton .....	2 00
Royalty, at 50c. per ton .....	1 00
Unloading .....	30
Duty .....	40

Total per ton of pig iron .....\$ 6 10

Collingwood smelter: Ore supplied by the Superior Power Co., owning the Helen mine, at \$1.30 per ton, 1 2-3 ton, \$2.16 per ton pig.

Estimated cost of manufacture, Collingwood smelter:

Ore, 1 2-3 tons at \$1.30 per ton ....	\$ 2 16
Fuel, 1,800 lbs. coke, at \$4 per ton ..	3 60
Lime .....	15
Labor .....	1 05
Maintenance and interest, 10 per cent.	1 24
Power, oil, etc. ....	25
Office .....	25

Total .....\$ 8 74

Probable estimate to Irondale smelter:

Ore, 2 tons at \$3.05 .....	\$ 6 10
Fuel, 1,800 lbs. coke .....	3 60
Lime .....	15
Labor, 100 per cent. additional .....	2 10
Maintenance and interest, 10 per cent.	1 23



Power, oil, etc. ....	25
Office .....	25
Total .....	\$13 75

Or a difference of about \$5 per ton.

The estimated cost of ore to the Irondale smelter would suffer a material reduction if smelted on the West Coast, owing to the abundance of raw materials on the spot, and a saving in the freight, unloading and duty. If the Dominion bounty of \$3 per ton were taken from the cost, the local manufacture would be brought down to \$10.73 per ton or less. In establishing the iron industry on this side of the line an immediate demand would be created for lime, charcoal, coal, coke, and a dozen and one necessities, requiring the employment of large numbers of skilled and unskilled laborers. This would give a stimulus and lead to the establishment of many other industries little thought of at present. A permanency would be thus attained and a rapid development would take place, leaving the Pacific base of supply practically in our hands.

#### Markets.

This is a subject which might, in conjunction with the foregoing chapter, be referred for future report. In addition to observations on the cost of manufacturing, reliable information is now being received by the bureau of information on iron consumption. This should be disseminated as early as possible, for upon this question lies the immediate or future establishment of smelters and rolling mills. The incomplete returns in the hands of your committee are of small value to manufacturers or capitalists; but probable markets may be found to exist for a British Columbia product in Japan, a large consumer with little or no iron of her own; China, Mexico, Guatemala, San Salvador, Nicaragua, Costa Rica, Republic of Columbia, Philippine Islands, Venezuela, Ecuador, British East Indies, and possibly Australia. It is worthy of note that Japan alone imports from all countries iron and steel manufactures of \$16,000,000 value—an increase of 100 per cent. over the preceding year.

It will be seen at a glance that these markets, if supplied by Canada, must, owing to transcontinental railway charges, depend upon Pacific Coast mills and factories. With unhampered restrictions upon the raw material from British Columbia, it is possible that our energetic neighbors might arise to the occasion and become formidable competitors. Much depends at the present juncture on the uses made of our opportunities. Your committee are of the opinion that this question has not been entered upon too soon.

#### Imports of Iron and Steel.

As showing the extent of the home market, the following figures are taken from the Statistical Year Book on imported iron and steel manufactures, exception being taken on ship's boilers, fish hooks, printing presses, tin plate, sheets, etc.

##### Year Ending 30th June.

	Dutiable.	Free.	Total.
1892 .....	\$ 9,968,409	\$2,673,033	\$12,641,442
1893 .....	10,113,177	3,080,346	13,199,223
1894 .....	8,776,533	2,554,238	11,310,771
1895 .....	7,405,923	1,843,826	9,249,749
1896 .....	8,463,747	2,488,860	10,952,607

1897 .....	8,666,497	1,947,133	10,613,630
1898 .....	12,691,772	3,864,989	16,556,761
1899 .....	15,621,346	4,147,379	19,768,725
1900 .....	22,299,073	7,130,160	26,429,233
1901 .....	18,738,135	8,042,323	26,780,458

Total 10 years: Dutiable, \$122,734,612; free, \$37,778,287; or a grand total of free and dutiable imports of \$160,512,899 for the past ten years.

#### Dominion Government Bounty on Steel.

Recognizing the immense advantages accruing to the Dominion in being enabled to provide for the ever-increasing demand for iron and steel, the Dominion government offers a bounty of \$3 per ton on pig iron made from Canadian ores, and \$2 per ton on foreign, and a further sum of \$3 per ton on steel ingots. This bounty is reduced 20 per cent. per annum after the 23rd day of April, 1902. It is possible, however, owing to the success attending its efforts, that an extension might be given for several years—until, perhaps, 1907. This aid has been supplemented by the Ontario government, which has added \$1 per ton for pig iron manufactured in Ontario from Ontario ores. This provision, with other concessions, has led to the establishment of the steel industry upon a substantial basis, and a corresponding prosperity in the provinces wherein located.

Owing, however, to the rapidly increasing demand in consequence of internal development, it will be some time before any perceptible impression is made upon the imports, and a splendid field is afforded in this province for further extension in this direction.

#### Lack of Provincial Information.

It is greatly to be regretted that so little information is forthcoming upon such an important subject from official sources, and it is to be hoped the government will see its way clear to keep one or two practical men constantly in the field—thus enabling it to keep in closer touch with the development now going on—reporting upon fresh locations and supplying capitalists with reliable information as to our mineral wealth.

The question of re-staking claims demands immediate attention. Gross abuses of the present act exist, and many good locations are tied up, which greatly affects any attempt at development.

#### Reticence of Prospectors.

The best information obtainable on the character of magnetite and hematite deposits is at present in the possession of private prospectors. Your committee have interviewed a number of these gentlemen, and it would appear that considerable activity is going on at the present time in the interests of wealthy syndicates having in view the immediate establishment of smelters and rolling mills. It is owing to this fact that little can be gleaned from private prospectors. They represent to your committee that being under engagement to the companies referred to they are not at liberty at the present time to give out any information. When this has been presented to their principals, we are led to believe that the league will be placed in possession of information regarding a number of unreported properties.

### Impressions.

In pursuing the investigations called for, we have been particularly impressed with the immense distribution which has taken place by nature of the raw materials throughout this province, and particularly so of the Island of Vancouver. At a period in our history when the various manufacturing interests of the world have been brought to such a perfected state and increasing at a rapid ratio each year, it would appear to us that the time must be necessarily short before world-wide attention is directed this way. From the manufacturing possibilities presented to us by the great wealth lying dormant in forest and sea, from a harnessing of electricity to the water powers of the West Coast to assist in bringing about a cheaper method of production in man's requirements, much is to be expected. The importance of such factors few appears to realize, and of the future that lies before us how much remains with ourselves in bringing it about in our own time, thus replacing present conditions with those of a happier nature.

### Suggestions.

In suggesting to the league methods which we think would prove beneficial and tend toward the immediate development of the iron industry in this province, your committee have written to the bureau of information for the province of Ontario for all information showing the course pursued by that government in giving encouragement to iron and steel smelting in that province. This will be shortly forthcoming, and will be placed before you for consideration and action. We believe the iron and steel trade to be the foundation of all the industries of a country, and there is no reason why, with the advantages possessed by us, full enjoyment should not be taken of the privileges.

To bring forward debate, your committee make the following suggestions:

1. That the Minister of Mines be asked to have the various ore bodies reported upon, that accurate knowledge be forthcoming regarding: (a) The locality; (b) Quality of ore; (c) The extent of deposits, and commercial value of the same.

2. The preventing of re-staking of claims, and speedy punishment for false declaration in respect to improvements.

3. That a bill be brought down embodying the following legislation in addition to the mining laws of the province: (a) That a bonus of not less than \$—, nor more than \$—, be offered prospectors for each available body of magnetite or hematite ores discovered within the province, the same being approved of by the proper officer as to quality, quantity, and availability for manufacturing purposes; (b) That all such deposits be reserved by the government in the interests of the owner to the intent that he be aided by the government in obtaining full money value for his find. This prevents the owner locking up the raw materials of the province against industry; (c) That in cases where the owner is unable to prove his find the government shall (if considered of value) reserve and prove the same, deducting the expenses from the amount of bonus or royalty thereafter paid; (d) The government shall place the reserved properties in the hands of responsible parties who will deposit a bond with the government covering a contract to mine such quantity of ore per year as shall be agreed upon. Smelting, or have the same smelted, within the province. That for each ton of ore mined the discoverer shall be paid a royalty, the amount of which shall be determined according to quality, quantity and the availability of the ore, the government at all times acting as arbitrator of values. In event of an arrangement being made for the sale or purchase of a deposit outright, the purchaser shall be required to deposit a bond with the government covering an agreement (under the law of reserve) that the material taken from such mines shall be smelted within the province.

The report was laid on the table for future reference.